



Pinellas Environmental Restoration Project

Northeast Site Non-Aqueous Phase Liquids Interim Measure Progress Report July Through September 2005

October 2005



Office of Legacy Management

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Interim Measures Progress Report**

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Work Performed by S.M. Stoller Corporation under DOE Contract No. DE-AC01-02GJ79491
for the U.S. Department of Energy Office of Legacy Management, Grand Junction, Colorado

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1.0 Introduction

This quarterly report for the in-situ thermal remediation of non-aqueous phase liquids (NAPL) at the Northeast Site covers the period of July through September 2005. Previous reports provided background information for the site, a description of the remediation process, an overview of construction and operation activities for NAPL Area A, a description of the final activities for the Area A remediation system, including demobilization, confirmatory sampling, and the final report. Additionally, recent quarterly reports contained a description of planning and construction activities for a similar treatment system at NAPL Area B ([Figure 1](#)).

The subcontract for Area B NAPL remediation was awarded to the team of WRS Infrastructure and Environment, Inc., McMillan-McGee Corporation, and PPM Consultants, Inc. in late February 2004. The subcontractor completed the final conceptual design for Area B NAPL remediation in early April 2004, and this was submitted to Florida Department of Environmental Protection (FDEP) in mid-April as the *Addendum to the Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site (Area B Conceptual Design)* (DOE 2004). FDEP approval of this document was received in June 2004. Final design drawings were submitted to FDEP at the end of June 2004. Construction activities began in early July 2004. Construction was completed in early August 2005, and operations began in mid-August 2005.

Activities during this current quarter consisted of the completion of construction activities, operations startup, and the first six weeks of operations.

2.0 Summary of Activities

In early August 2005, the WRS team submitted the final versions of plans that were required for operations: the Operations and Monitoring Plan, and revised versions of the Health and Safety Plan, Quality Control Plan, and Sampling and Analysis Plan. All construction activities were completed by early August. System testing and checkout were completed in early August, and an operations readiness review meeting was held on August 9.

System operation started on August 16, 2005. The initial activity was extraction of groundwater via the 23 extraction wells to establish hydraulic control. One week later vapor extraction was started to establish pneumatic control. Approximately two weeks after the start of system operation, Phase I (pre-heating) of subsurface heating was started when full power was applied to the electrodes located around the perimeter of Area B and in the Hawthorn Formation, and half power was applied to most of the interior electrodes. One week after initial power-up of the electrodes, Phase II (ramp-up) began when full power was applied to all electrodes. As of the last week of September 2005, approximately three weeks after heating was started, the average temperature in the subsurface inside Area B was approximately 40 °C (104 °F). Phase II heating is estimated to last for a total of seven to eight weeks.

Sampling of the six new wells inside former NAPL Area A (0573–0578) and the eight wells located just outside the area (0560–0567) ([Figure 2](#)) continued with routine quarterly sampling activities in July ([Table 1](#)). These data demonstrate that contaminant concentrations remain low both inside and around the periphery of the former NAPL area, and provide clear evidence that

NAPL remediation was successful with no rebound in contaminant concentrations. Ground water temperatures from the six interior wells averaged 109, 100, 93, 88, and 92 °F in July 2004, October 2004, January 2005, April 2005, and July 2005, respectively.

3.0 Deviations

No deviations were encountered during this quarter.

4.0 Problems

No problems were encountered during this quarter.

5.0 Upcoming Activities

Activities for the next quarter, October through December 2005, consist of the following. The ramp-up phase of heating will continue until target temperatures are reached in the subsurface. The target temperature varies with depth and the amount of vacuum, but ranges approximately from 90 to 120 °C. After target temperatures are reached, Phase III heating (maintenance) will begin. This consists of maintaining temperatures, and cycling the power, water injection rates, and amount of applied vacuum to maximize contaminant recovery. The maintenance phase of operations will continue through the quarter. Active heating is scheduled to continue until late February 2006.

6.0 References

U.S. Department of Energy, 2004. *Addendum to the Interim Measures Work Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site (Area B Conceptual Design)*, DOE-LM/GJ635-2004, Document Number N0075500, April.

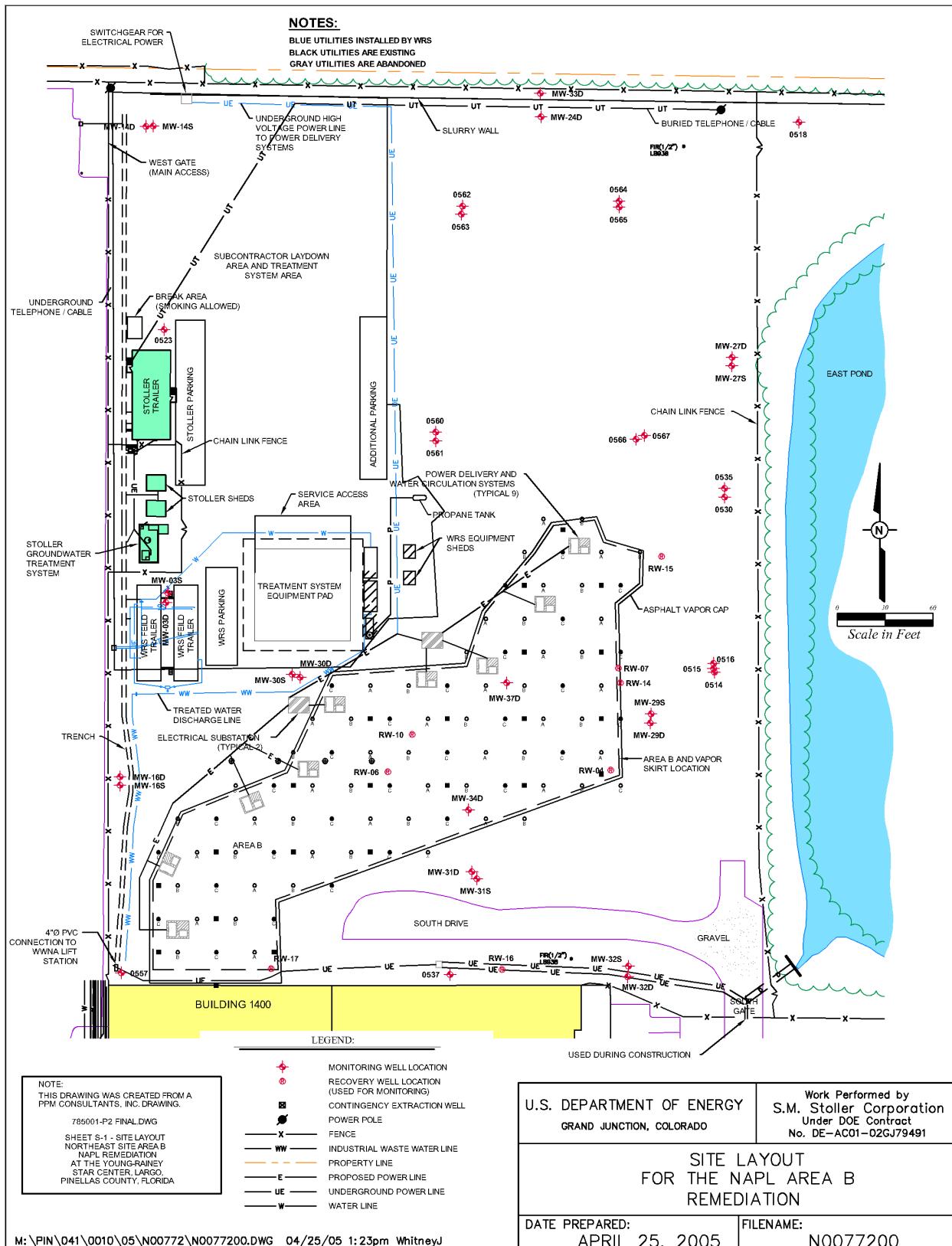


Figure 1. NAPL Area B Remediation System Layout

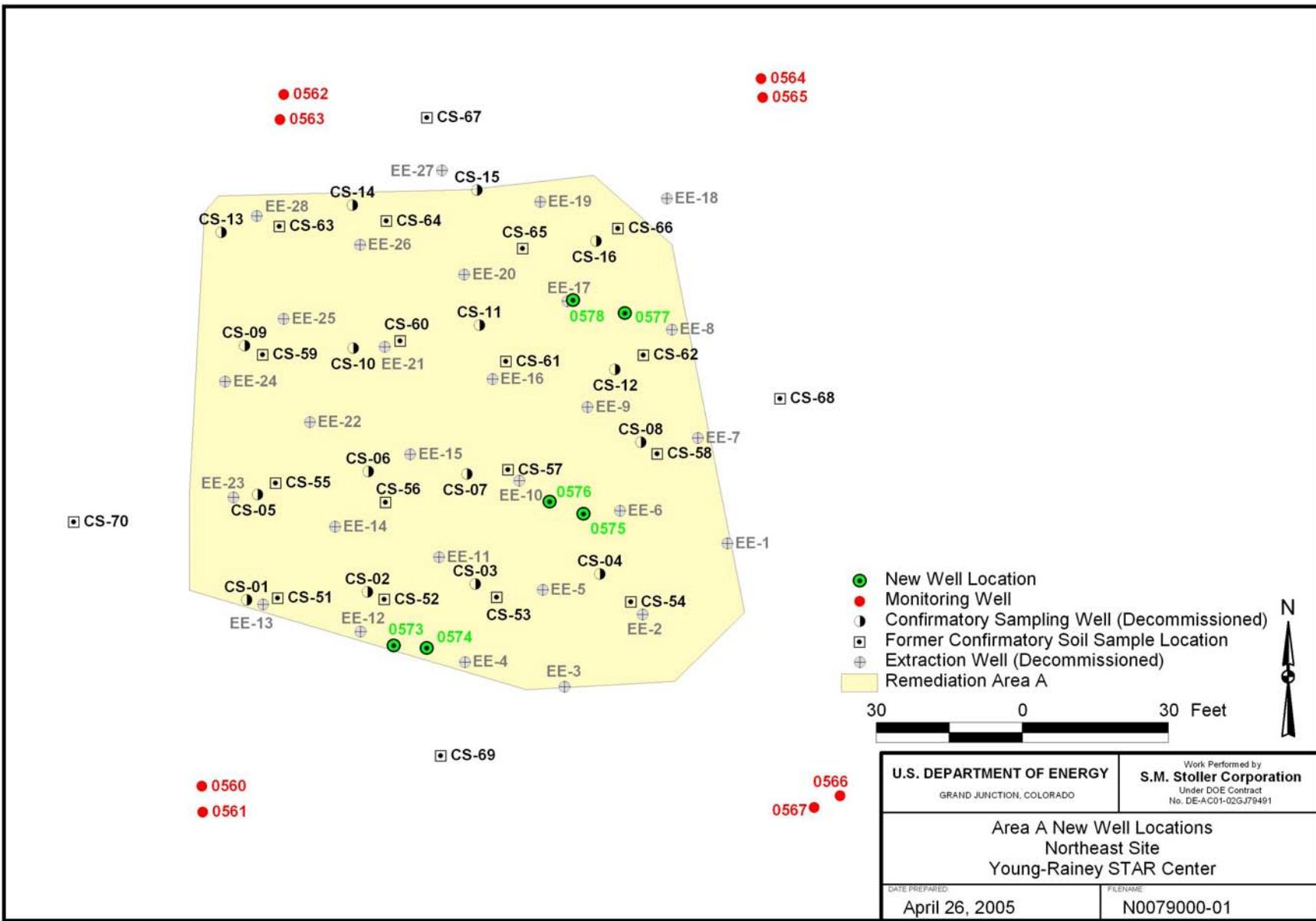


Figure 2. Location of Monitoring Wells at Former NAPL Area A

*Table 1. Results From Recent Sampling of Area A Wells.
All concentrations are in µg/L.*

Well	Date Sampled	TCE	cis-1,2-DCE	Vinyl chloride	Methylene chloride	Benzene	Toluene
Interior Wells							
0573	7/13/2004	<2.5	63.3	<2.5	<5	<2.5	<2.5
	10/11/2004	<0.5	12.6	12.7	<1	0.66J	1.2
	1/11/2005	<0.5	19.7	22.9	<1	0.89J	1.5
	4/7/2005	<0.5	5.3	24.8	<1	0.71J	1.3
	7/18/2005	<0.5	<0.5	22.4	<1	<0.5	1.2
0574	7/13/2004	6.6	351	210	<5	<2.5	<2.5
	10/7/2004	35.4	330	58.9	<1	0.96J	0.81J
	1/11/2005	32.9	86.1	28.2	<1	0.76J	0.84J
	4/7/2005	15.4	39	13.8	<1	<0.5	<0.5
	7/18/2005	16.3	22.2	7.7	<1	<0.5	<0.5
0575	7/23/2004	<0.5	1.5	77.1	<1	<0.5	4.5
	10/11/2004	<0.5	4.4	35.9	<1	2.1	1.9
	1/11/2005	<0.5	5.4	34.9	<1	1.9	2.2
	4/15/2005	<0.5	2.8	15.1	<1	1.1	1.1
	7/18/2005	<0.5	<0.5	15.7	<1	1.4	1.2
0576	7/23/2004	<0.5	3	<0.5	<1	0.85J	0.6J
	10/7/2004	<0.5	14.1	6.5	<1	0.63J	<0.5
	1/11/2005	<0.5	18.7	11.2	<1	0.95J	<0.5
	4/15/2005	<0.5	27.8	20.1	<1	0.68J	<0.5
	7/18/2005	1.1	46.8	63.1	<1	<0.5	<0.5
0577	7/23/2004	<0.5	<0.5	339	<1	<0.5	394
	10/7/2004	<5	<5	441	<10	6.3J	234
	1/12/2005	<2.5	14.5	276	<5	5.7	21.1
	4/15/2005	1.3	2.6	33	<1	4.1	6.6
	7/18/2005	<0.5	<0.5	4.9	<1	5.1	6.2
0578	7/23/2004	<0.5	5.7	24.4	<1	<0.5	1.7
	10/11/2004	<0.5	10.2	25.2	<1	<0.5	0.91J
	1/12/2005	<0.5	8.3	7.9	<1	<0.5	<0.5
	4/15/2005	<0.5	4.6	2.9	<1	<0.5	<0.5
	7/18/2005	<0.5	1.1	1.7	<1	<0.5	<0.5
Eight Peripheral Wells							
0560	10/12/2004	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	1/12/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	7/18/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
0561	10/12/2004	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	1/12/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	4/15/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	7/18/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
0562	10/7/2004	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	1/11/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	4/6/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	7/18/2005	<0.5	<0.5	<0.5	1.1J	<0.5	<0.5

Table 1 (continued). Results From Recent Sampling of Area A Wells. All concentrations are in $\mu\text{g/L}$.

Well	Date Sampled	TCE	cis-1,2-DCE	Vinyl chloride	Methylene chloride	Benzene	Toluene
0563	10/8/2004	<0.5	2.1	<0.5	<1	<0.5	<0.5
	1/11/2005	<0.5	1.4	<0.5	<1	<0.5	<0.5
	4/7/2005	<0.5	1.3	<0.5	<1	<0.5	<0.5
	7/18/2005	<0.5	1.1	<0.5	<1	<0.5	<0.5
0564	10/12/2004	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	1/11/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	4/14/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	7/18/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
0565	10/12/2004	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	1/11/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	4/14/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
	7/18/2005	<0.5	<0.5	<0.5	<1	<0.5	<0.5
0566	10/12/2004	<0.5	4.7	4.5	<1	1.5	<0.5
	1/12/2005	<0.5	3.8	3.8	<1	1.3	<0.5
	4/14/2005	<0.5	4.9	4.8	<1	1.4	<0.5
	7/18/2005	160	83	20.5	<1	2	<0.5
0567	10/12/2004	1.8	68	34.5	<1	12.8	<0.5
	1/12/2005	1.3	52.3	22.7	<1	7.2	<0.5
	4/14/2005	1.2	49.5	24.7	<1	5.6	<0.5
	7/18/2005	<0.5	5.7	3	<1	<0.5	<0.5
	MCL:	3	70	1	5	1	1,000

"<" values are reporting limit.

J = Estimated value between the method detection limit and the reporting limit.